

Docket No. 500.36898VX1
Appln. No. 09/511,158
May 1, 2006

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1. – 15. (Cancelled).

16. (New) A polyester manufacturing apparatus which produces high molecular weight polyester from raw materials of an aromatic dicarboxylic acid or its derivative and glycols, the apparatus comprising:

a first reactor in which the aromatic dicarboxylic acid or its derivative is reacted with the glycols, thereby producing a first product;

a second reactor in which the first product from the first reactor is polycondensed, thereby producing a second product which is a low molecular weight polyester polymerized to a higher degree than said first product; and

a third reactor in which the second product from the second reactor is further polycondensed, thereby producing a high molecular weight polyester polymerized to a higher degree than the low molecular weight polyester,

said third reactor comprising a substantially horizontal cylindrical vessel, an inlet for the low molecular weight polyester from the second reactor disposed at one end of the vessel, an outlet for the high molecular weight polyester disposed at another end of the vessel, and a stirring rotor which is provided and rotated in the vessel to stir the second product fed to the third reactor,

said stirring rotor comprising a plurality of stirring blocks depending on viscosities of the low molecular weight polyester polycondensed in the third reactor, and having no shaft at the rotating center, each of said stirring blocks having a

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plurality of disks next to each other and connected to each other by rods in parallel to the rotating center, with a hollow disposed at its center area and scraping vanes disposed on its periphery portion around the hollow in the space between these disks, said plurality of disks having a plate portion at least in its periphery portion and the stirring blocks having different structures of the disks or the vanes.

17. (New) A polyester manufacturing apparatus according to claim 16, wherein the stirring rotor is provided such that a film of the low molecular weight polyester is formed over the hollow by low molecular weight polyester being scooped up by the scraping vanes and flowing downward as the stirring rotor rotates.

18. (New) A polyester manufacturing apparatus according to claim 17, wherein a number of the scraping vanes in a high viscosity side of the stirring blocks, where the outlet is nearer, is smaller than the number of the scraping vanes in a low viscosity side of the stirring blocks, where the inlet is nearer.

19. (New) A polyester manufacturing apparatus according to claim 17, wherein an area of the hollow of the disks in a high viscosity side of the stirring blocks, where the outlet is nearer, is larger than the area of the hollow of the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

20. (New) A polyester manufacturing apparatus according to claim 19, wherein a number of the scraping vanes in a high viscosity side of the stirring blocks, where the outlet is nearer, is smaller than the number of the scraping vanes in a low viscosity side of the stirring blocks, where the inlet is nearer.

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21. (New) A polyester manufacturing apparatus according to claim 17, wherein a space between the disks in a high viscosity side of the stirring blocks, where the outlet is nearer, is larger than the space between the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

22. (New) A polyester manufacturing apparatus according to claim 18, where a space between the disks in a high viscosity side of the stirring blocks, where the outlet is nearer, is larger than the space between the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

23. (New) A polyester manufacturing apparatus according to claim 19, wherein a space between the disks in a high viscosity side of the stirring blocks, wherein the outlet is nearer, is larger than the space between the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

24. (New) A polyester manufacturing apparatus according to claim 16, wherein a number of the scraping vanes in a high viscosity side of the stirring blocks, where the outlet is nearer, is smaller than the number of the scraping vanes in a low viscosity side of the stirring blocks, where the inlet is nearer.

25. (New) A polyester manufacturing apparatus according to claim 16, wherein an area of the hollow of the disks in a high viscosity side of the stirring blocks, where the outlet is nearer, is larger than the area of the hollow of the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

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26. (New) A polyester manufacturing apparatus according to claim 25, wherein a number of the scraping vanes in a high viscosity side of the stirring blocks, where the outlet is nearer, is smaller than the number of the scraping vanes in a low viscosity side of the stirring blocks, where the inlet is nearer.

27. (New) A polyester manufacturing apparatus according to claim 25, wherein a space between the disks in a high viscosity side of the stirring blocks, where the outlet is nearer, is larger than the space between the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

28. (New) A polyester manufacturing apparatus according to claim 16, wherein a space between the disks in a high viscosity side of the stirring block, where the outlet is nearer, is larger than the space between the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

29. (New) A polyester manufacturing apparatus according to claim 24, wherein a space between the disks in a high viscosity side of the stirring blocks, where the outlet is nearer, is larger than the space between the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

30. (New) A polyester manufacturing apparatus which produces high molecular weight polyester from raw materials of an aromatic dicarboxylic acid or its derivative and glycols, wherein the aromatic dicarboxylic acid or its derivatives are reacted in a first reactor, forming a resulting first product, the first product being

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polycondensed in a second reactor to form a second product which is a low molecular weight polyester, and the second product is further polycondensed in a third reactor, the apparatus comprising:

said third reactor which further polycondenses the second product from the second reactor, thereby producing a high molecular weight polyester polymerized to a higher degree than the low molecular weight polyester,

said third reactor comprising a substantially horizontal cylindrical vessel, an inlet for the low molecular weight polyester from the second reactor disposed at one end of the vessel, an outlet for the high molecular weight polyester disposed at another end of the vessel, and a stirring rotor which is provided and rotated in the vessel to stir the second product fed to the third reactor,

said stirring rotor comprising a plurality of stirring blocks depending on viscosities of the low molecular weight polyester polycondensed in the third reactor, and having no shaft at the rotating center, each of said stirring blocks having a plurality of disks next to each other and connected to each other by rods in parallel to the rotating center, which a hollow disposed at its center area and scraping vanes disposed on its periphery portion around the hollow in the space between these disks, said plurality of disks having a plate portion at least in its periphery portion and the stirring blocks having different structures of the disks or the vanes.

31. (New) A polyester manufacturing apparatus according to claim 30, wherein the stirring rotor is provided such that a film of the low molecular weight polyester is formed over the hollow by low molecular weight material being scooped up by the scraping vanes and flowing downward as the stirring rotor rotates.

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32. (New) A polyester manufacturing apparatus according to claim 30, wherein a number of the scraping vanes in a high viscosity side of the stirring blocks, where the outlet is nearer, is smaller than the number of the scraping vanes in a low viscosity side of the stirring blocks, where the inlet is nearer.

33. (New) A polyester manufacturing apparatus according to claim 30, wherein an area of the hollow of the disks in a high viscosity side of the stirring blocks, where the outlet is nearer, is larger than the area of the hollow of the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

34. (New) A polyester manufacturing apparatus according to claim 33, wherein a number of the scraping vanes in a high viscosity side of the stirring blocks, where the outlet is nearer, is smaller than the number of the scraping vanes in a low viscosity side of the stirring blocks, where the inlet is nearer.

35. (New) A polyester manufacturing apparatus according to claim 30, wherein a space between the disks in a high viscosity side of the stirring block, where the outlet is nearer, is larger than the space between the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

36. (New) A polyester manufacturing apparatus according to claim 32, wherein a space between the disks in a high viscosity side of the stirring blocks, where the outlet is nearer, is larger than the space between the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.

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37. (New) A polyester manufacturing apparatus according to claim 33, where a space between the disks in a high viscosity side of the stirring blocks, wherein the outlet is nearer, is larger than the space between the disks in a low viscosity side of the stirring blocks, where the inlet is nearer.